

SEQUENCE LISTING

<110> Vanderbilt University

<120> Cell-Permeable SOCS Proteins that
Inhibit Cytokine-Induced Signaling

<130> 22000.0129P1

<150> 60/550,037

<151> 2004-03-04

<160> 29

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 1

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
1				5					10					15	
Arg	Gly	Ser													

<210> 2

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 2

Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu	Ala	Ala	Pro
1				5					10		

<210> 3

<211> 212

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 3

Met	Val	Ala	Arg	Asn	Gln	Val	Ala	Ala	Asp	Asn	Ala	Ile	Ser	Pro	Ala
1				5					10					15	
Ala	Glu	Pro	Arg	Arg	Arg	Ser	Glu	Pro	Ser	Ser	Ser	Ser	Ser	Ser	Ser
			20					25					30		

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Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala
      35                40                45
Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp
      50                55                60
Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe
65      65      70      75      80
Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala
      85                90                95
Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys
      100               105               110
Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg
      115               120               125
Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr
      130               135               140
Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg
145      145      150      155      160
Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln
      165               170               175
Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu
      180               185               190
Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe
      195               200               205
Pro Phe Gln Ile
      210

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<210> 4

<211> 225

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 4

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Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu
 1      5      10      15
Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln
      20      25      30
Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp
      35      40      45
Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro
50      55      60
Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe
65      70      75      80
Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln
      85      90      95
Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln
      100     105     110
Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met
      115     120     125
Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser
      130     135     140
Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr
145      150     155     160
Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu
      165     170     175
Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu
      180     185     190
Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr
      195     200     205

```

Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro
 210 215 220
 Leu
 225

<210> 5
 <211> 243
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 5
 Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1 5 10 15
 Arg Gly Ser Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile
 20 25 30
 Ser Pro Ala Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser
 35 40 45
 Ser Ser Ser Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala
 50 55 60
 Val Pro Ala Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser
 65 70 75 80
 His Ser Asp Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala
 85 90 95
 Cys Gly Phe Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg
 100 105 110
 Leu Arg Ala Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln
 115 120 125
 Arg Asn Cys Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr
 130 135 140
 Ser Ile Arg Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser
 145 150 155 160
 Arg Glu Thr Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala
 165 170 175
 Ala Pro Arg Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg
 180 185 190
 Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg
 195 200 205
 Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu
 210 215 220
 Ser Ser Phe Pro Phe Gln Ile Ala Ala Val Leu Leu Pro Val Leu Leu
 225 230 235 240
 Ala Ala Pro

<210> 6
 <211> 243
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 6
 Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1 5 10 15

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Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
      20                      25                      30
Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala Ala
      35                      40                      45
Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser
      50                      55                      60
Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala Pro
      65                      70                      75                      80
Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp Tyr
      85                      90                      95
Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe Tyr
      100                     105                     110
Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala Glu
      115                     120                     125
Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys Phe
      130                     135                     140
Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg Val
      145                     150                     155                     160
His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr Phe
      165                     170                     175
Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg Arg
      180                     185                     190
Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln Glu
      195                     200                     205
Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu Ala
      210                     215                     220
Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe Pro
      225                     230                     235                     240
Phe Gln Ile

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<210> 7

<211> 244

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 7

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Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
  1                      5                      10                      15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
      20                      25                      30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
      35                      40                      45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
      50                      55                      60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
      65                      70                      75                      80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
      85                      90                      95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
      100                     105                     110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
      115                     120                     125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
      130                     135                     140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
      145                     150                     155                     160

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Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
      165      170      175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
      180      185      190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
      195      200      205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
      210      215      220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225      230      235      240
Asp Ala Pro Leu

```

<210> 8

<211> 256

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 8

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Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1      5      10      15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
      20      25      30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
      35      40      45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
      50      55      60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
65      70      75      80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
      85      90      95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
      100      105      110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
      115      120      125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
      130      135      140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
145      150      155      160
Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
      165      170      175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
      180      185      190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
      195      200      205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
      210      215      220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225      230      235      240
Asp Ala Pro Leu Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro
      245      250      255

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<210> 9

<211> 256

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 9

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
1				5					10					15	
Arg	Gly	Ser	Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu	Ala	Ala	Pro	Met
			20					25					30		
Val	Thr	His	Ser	Lys	Phe	Pro	Ala	Ala	Gly	Met	Ser	Arg	Pro	Leu	Asp
		35					40					45			
Thr	Ser	Leu	Arg	Leu	Lys	Thr	Phe	Ser	Ser	Lys	Ser	Glu	Tyr	Gln	Leu
	50					55					60				
Val	Val	Asn	Ala	Val	Arg	Lys	Leu	Gln	Glu	Ser	Gly	Phe	Tyr	Trp	Ser
65					70					75					80
Ala	Val	Thr	Gly	Gly	Glu	Ala	Asn	Leu	Leu	Leu	Ser	Ala	Glu	Pro	Ala
			85						90					95	
Gly	Thr	Phe	Leu	Ile	Arg	Asp	Ser	Ser	Asp	Gln	Arg	His	Phe	Phe	Thr
			100					105					110		
Leu	Ser	Val	Lys	Thr	Gln	Ser	Gly	Thr	Lys	Asn	Leu	Arg	Ile	Gln	Cys
		115					120					125			
Glu	Gly	Gly	Ser	Phe	Ser	Leu	Gln	Ser	Asp	Pro	Arg	Ser	Thr	Gln	Pro
	130					135					140				
Val	Pro	Arg	Phe	Asp	Cys	Val	Leu	Lys	Leu	Val	His	His	Tyr	Met	Pro
145					150					155					160
Pro	Pro	Gly	Thr	Pro	Ser	Phe	Ser	Leu	Pro	Pro	Thr	Glu	Pro	Ser	Ser
			165						170					175	
Glu	Val	Pro	Glu	Gln	Pro	Pro	Ala	Gln	Ala	Leu	Pro	Gly	Ser	Thr	Pro
			180					185					190		
Lys	Arg	Ala	Tyr	Tyr	Ile	Tyr	Ser	Gly	Gly	Glu	Lys	Ile	Pro	Leu	Val
		195					200					205			
Leu	Ser	Arg	Pro	Leu	Ser	Ser	Asn	Val	Ala	Thr	Leu	Gln	His	Leu	Cys
	210					215					220				
Arg	Lys	Thr	Val	Asn	Gly	His	Leu	Asp	Ser	Tyr	Glu	Lys	Val	Thr	Gln
225				230						235					240
Leu	Pro	Gly	Pro	Ile	Arg	Glu	Phe	Leu	Asp	Gln	Tyr	Asp	Ala	Pro	Leu
			245					250						255	

<210> 10

<211> 1121

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 10

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agaaaaagaa	ccagccgctt	ccagtcacct	ccccctccgc	caccatttcg	gacaccctgc	120
acactctcgt	tttggggtac	cctgtgactt	ccaggcagca	cgcgagggtcc	actggcccca	180
gctcggggcga	ccagctgtct	gggacgtggt	gactcatctc	ccatgaccct	gcggtgcctg	240
gagccctccg	ggaatggagc	ggacaggacg	cggagccagt	gggggaccgc	ggggttgccg	300
gaggaacagt	cccccgaggc	ggcgcgtctg	gcgaaagccc	tgcgcgagct	cagtcaaaca	360
ggatggtact	ggggaagtat	gactgttaat	gaagccaaag	agaaattaaa	agaggctcca	420
gaaggaactt	tcttgattag	agatagttcg	cattcagact	acctactaac	tatatccgtt	480
aagacgtcag	ctggaccgac	taacctgcgg	attgagtacc	aagatgggaa	attcagattg	540
gattctatca	tatgtgtcaa	gtccaagctt	aaacagtttg	acagtgtggt	tcattctgatt	600
gactactatg	tccagatgtg	caaggataaa	cggacaggcc	cagaagcccc	acggaatggg	660
actgttcacc	tgtacctgac	caaacctctg	tatacatcag	caccactctt	gcagcatttc	720
tgctcgactcg	ccattaacaa	atgtaccggt	acgatctggg	gactgccttt	accaacaaga	780

ctaaaagatt	acttggaaga	atataaattc	caggtataag	tattttctctc	tcttttttcgt	840
tttttttttaa	aaaaaaaaaa	acacatgcct	catatagact	atctccgaat	gcagctatgt	900
gaaagagaac	ccagaggccc	tcctctggat	aactgcgcag	aattctctct	taaggacagt	960
tgggctcagt	ctaacttaaa	gggtgtgaaga	tgtagctagg	tatttttaaag	ttccccttag	1020
gtagtttttag	ctgaatgatg	ctttctttcc	tatggctgct	caagatcaaa	tggccctttt	1080
aatgaaaca	aaacaaaaca	aaacaaaaaa	aaaaaaaaaa	a		1121

<210> 11

<211> 2746

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 11

ggctccgact	tggactccct	gctccgctgc	tgccgcttcg	gccccgcacg	cagccagccg	60
ccagccgccc	gccccgccc	gctcccgcgg	cgcccccttg	ccgcgggtccc	tctcctgggtc	120
ccctcccggg	tgggtccggg	gtgcgcaggg	ggcagggcgg	gcgcccaggg	gaagctcgag	180
ggacgcgcgc	gcgaaggctc	ctttgtggac	ttcacggccg	ccaacatctg	ggcgcagcgc	240
gggccaccgc	tggccgtctc	gccgccgcgt	cgccttgggg	acccgagggg	gctcagcccc	300
aaggacggag	acttcgattc	gggaccagcc	ccccgggatg	cggtagcggc	cgctgtgcgg	360
aggccgcgaa	gcagctgcag	ccgccgcgcg	gcagatccac	gctgggtccg	tgcgccatgg	420
tcacccacag	caagtttccc	gccgccggga	tgagccgccc	cctggacacc	agcctgcgcc	480
tcaagacctt	cagctccaag	agcgagtacc	agctgggtgg	gaacgcagtg	cgcaagctgc	540
aggagagcgg	cttctactgg	agcgcagtga	ccggcggcga	ggcgaacctg	ctgctcagtg	600
ccgagcccgc	cggcaccttt	ctgatccgcg	acagctcgga	ccagcgccac	ttcttcacgc	660
tcagcgtcaa	gacccagtct	gggaccaaga	acctgcgcac	ccagtgtgag	gggggcagct	720
tctctctgca	gagcgatccc	cggagcacgc	agcccgtgcc	ccgcttcgac	tgctgtctca	780
agctgggtgca	ccactacatg	ccgccccctg	gagccccctc	cttcccctcg	ccacctactg	840
aaccctcctc	cgaggtgccc	gagcagccgt	ctgcccagcc	actccctggg	agtcccccca	900
gaagagccta	ttacatctac	tccggggggc	agaagatccc	cctgggtgtt	agccggcccc	960
tctcctccaa	cgtggccact	cttcagcatc	tctgtcggaa	gaccgtcaac	ggccacctgg	1020
actcctatga	gaaagtcacc	cagctgccgg	ggcccatctg	ggagtccctg	gaccagtacg	1080
atgccccgct	ttaaggggta	aagggcgcaa	agggcatggg	tcgggagagg	ggacgcaggc	1140
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ctctgggggg	aaagagggcg	gacaggcccc	tccctctgcc	ctctccctgc	agaatgtggc	1260
aggcggacct	ggaatgtgtt	ggaggggaag	gggagtacca	cctgagtctc	cagcttctcc	1320
ggaggagcca	gctgtccttg	tgggacgata	gcaaccacaa	gtggattctc	cttcaattcc	1380
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gccagggaat	cttcaaactt	tccaacggaa	cttgtttgct	ctttgatttg	gtttaaacct	1500
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gcgggctggc	gaaggaaatg	gtcacacccc	ccgcccaccc	caggcgagga	tcctgggtgac	1620
atgctcctct	ccctggctcc	gggggagaag	gcttgggggt	acctgaaggg	aaccatcctg	1680
gtaccccaca	tcctctcctc	cgggacagtc	accgaaaaca	caggttccaa	agtctacctg	1740
gtgcctgaga	gcccagggcc	cttcctccgt	tttaaggggg	aagcaacatt	tggaggggat	1800
ggatgggctg	gtcagctggg	ctccttttcc	tactcatact	ataccttcct	gtacctgggt	1860
ggatggagcg	ggaggatgga	ggagacggga	catctttcac	ctcaggctcc	tggtagagaa	1920
gacaggggat	tctactctgt	gcctcctgac	tatgtctggc	taagagattc	gccttaaagt	1980
ctccctgtcc	catggagagg	gacccagcat	aggaaagcca	catactcagc	ctggatgggt	2040
ggagaggctg	agggactcac	tggagggcac	caagccagcc	cacagccagg	gaagtgggga	2100
ggggggggcg	aaacccatgc	ctcccagctg	agcactggga	atgtcagccc	agtaagtatt	2160
ggccagtcag	gcgcctcgtg	gtcagagcag	agccaccagg	tcccactgcc	ccgagccctg	2220
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tttacaatct	gcctcaatca	ctctgtcttt	tataaagatt	ccacctccag	tcctctctcc	2580
tcccccttac	tcaggccctt	gaggctatta	ggagatgctt	gaagaactca	acaaaatccc	2640

aatccaagtc aaacttttgca catatttata tttatatattca gaaaagaaac atttcagtaa 2700
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<210> 12
 <211> 198
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 12
 Met Thr Leu Arg Cys Leu Glu Pro Ser Gly Asn Gly Ala Asp Arg Thr
 1 5 10 15
 Arg Ser Gln Trp Gly Thr Ala Gly Leu Pro Glu Glu Gln Ser Pro Glu
 20 25 30
 Ala Ala Arg Leu Ala Lys Ala Leu Arg Glu Leu Ser Gln Thr Gly Trp
 35 40 45
 Tyr Trp Gly Ser Met Thr Val Asn Glu Ala Lys Glu Lys Leu Lys Glu
 50 55 60
 Ala Pro Glu Gly Thr Phe Leu Ile Arg Asp Ser Ser His Ser Asp Tyr
 65 70 75 80
 Leu Leu Thr Ile Ser Val Lys Thr Ser Ala Gly Pro Thr Asn Leu Arg
 85 90 95
 Ile Glu Tyr Gln Asp Gly Lys Phe Arg Leu Asp Ser Ile Ile Cys Val
 100 105 110
 Lys Ser Lys Leu Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr
 115 120 125
 Tyr Val Gln Met Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg
 130 135 140
 Asn Gly Thr Val His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala
 145 150 155 160
 Pro Thr Leu Gln His Phe Cys Arg Leu Ala Ile Asn Lys Cys Thr Gly
 165 170 175
 Thr Ile Trp Gly Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu Glu
 180 185 190
 Glu Tyr Lys Phe Gln Val
 195

<210> 13
 <211> 2545
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 13
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 ctctccgtcg aggtccctcg cccaggtcct ttgcctgatt cgcccaggag tgcgcctcat 120
 cggcccgggg agcagcgaag ccagaggggg cgcacgcacg gggagcccct ttgtagactt 180
 cacggctgcc aacatctggg cgcagcgcga gccactgctg gccgcccctt cgcctcgggg 240
 accataggag gcgcagcccc aaggccggag atttcgcttc gggactagct ccccgggatg 300
 cggtagcggc cgctgtgcgg aggcgcgaa gcagctgcag ccaccgccgc gcagatccac 360
 gctggctccg tgcgccatgg tcaaacacag caagtttccc gccgcccggga tgagccgccc 420
 cctggacacc agcctgcgcc tcaagacctt cagctccaaa agcgagtacc agctggtggt 480
 gaacgccgtg cgcaagctgc aggagagcgg attctacttg agcgccgtga ccggcggcga 540
 ggcgaacctg ctgctcagcg ccgagcccgc gggcaccttt cttatccgcg acagctcgga 600
 ccagcgccac ttcttcacgt tgagcgtcaa gaccagtcg gggaccaaga acctacgcat 660

ccagtgtgag	gggggcagct	tttcgctgca	gagtgaaccc	cgaagcacgc	agccagttcc	720
ccgcttcgac	tgtgtactca	agctgggtgca	ccactacatg	ccgcctccag	ggacccccctc	780
cttttctttg	ccacccacgg	aaccctcgtc	cgaagtcccg	gagcagccac	ctgcccaggc	840
actccccggg	agtacccccca	agagagctta	ctacatctat	tctggggggcg	agaagattcc	900
gctggtactg	agccgacctc	tctcctccaa	cgtggccacc	ctccagcatc	tttgtcggaa	960
gactgtcaac	ggccacctgg	actcctatga	gaaagtgacc	cagctgcctg	gacccattcg	1020
ggagttcctg	gatcagtatg	atgctccact	ttaaggagca	aaaggggtcag	agggggggcct	1080
gggtcggtcg	gtcgccctctc	ctccgaggca	catggcacia	gcacaaaaat	ccagccccaa	1140
cggtcggtag	ctcccagtg	gccagggggca	gattggcttc	ttcctcaggc	cctccactcc	1200
cgcagagtag	agctggcagg	acctggaatt	cgtctgaggg	gaggggggagc	tgccacctgc	1260
tttccccctc	ccccagctc	cagcttcttt	caagtggagc	cagccggcct	ggcctgggtg	1320
gacaatacct	ttgacaagcg	gactctcccc	tcccccttcc	ccacaccccc	tctgcttccc	1380
aagggaggtg	gggacacctc	caagtgttga	acttagaact	gcaaggggaa	tcttcaaact	1440
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ccactgcca	acctagggtga	ggagtgggtg	ctcctggctc	tggggagagt	ggcaaggggt	1620
gacctgaaga	gagctatact	ggtgccaggc	tcctctccat	ggggcagcta	atgaaacctc	1680
gcagatccct	tgcacccacg	aaccctcccc	gttgtgaaga	ggcagtagca	tttagaagg	1740
agacagatga	ggctgggtgag	ctggccgcct	tttccaacac	cgaagggagg	cagatcaaca	1800
gatgagccat	cttggagccc	aggtttccct	ggagcagatg	gaggggttctg	ctttgtctct	1860
cctatgtggg	gctaggagac	tcgccttaaa	tgccctctgt	cccaggggatg	gggattggca	1920
cacaaggagc	caaacaagc	caataggcag	agagttagag	gattcaccca	ggtggctaca	1980
ggccagggga	agtggctgca	ggggagagac	ccagtcactc	aggagactcc	tgagttaaca	2040
ctgggaagac	attggccagt	cctagtcatc	tctcggtcag	taggtccgag	agcctccagg	2100
ccctgcacag	ccctcccttc	tcacctgggg	ggaggcagga	ggtgatggag	aagccttccc	2160
atgccgctca	caggggcctc	acgggaatgc	agcagccatg	caattacctg	gaactgggtcc	2220
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gttgggggtg	cttttttctc	tctgttttga	ataatgttta	caatttgcct	caatcacttt	2340
tataaaaatc	cacctccagc	ccgccccctc	ccccactcag	gccttcgagg	ctgtctgaag	2400
atgcttgaaa	aactcaacca	aatcccagtt	caactcagac	tttgcacata	tatttatatt	2460
tatactcaga	aaagaaacat	ttcagtaatt	tataataaaa	gagcactatt	ttttaatgaa	2520
aaaaaaaaaa	aaaaaaaaaa	aaaaa				2545

<210> 14

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 14

ccgcatatgg tcacccacag caagtttccc gcc

33

<210> 15

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 15

ccgcatatgt taaagtggag catcatactg atc

33

<210> 16

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 16

cgcataatgtc aggggtgcggc aagaagaaca gggagaagaa cggctgcaag tggagcatca	60
tactgatc	68

<210> 17

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 17

ccgcataatgg cagccgttct tctccctggt cttcttgccg caccggtcac ccacagcaag	60
tttcccgcc	69

<210> 18

<211> 1216

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 18

ggcagctgca cggctcctgg ccccgaggca tgcgcgagag ccgccccgga ggcccccgga	60
gccccccgcc gtcccgccc cggcgtccc cgccccgcc ccagcgcacc cccggacgct	120
atggcccacc cctccggctg gcccttctg taggatggta gcacacaacc aggtggcagc	180
cgacaatgca gtctccacag cagcagagcc ccgacggcgg ccagaacctt cctcctcttc	240
ctcctcctcg cccgcggccc ccgcgcgccc gcggccgtgc ccgcgggtcc cggccccggc	300
ccccggcgac acgcacttcc gcacattccg ttcgcacgcc gattaccggc gcatcacgcg	360
cgccagcgcg ctccctggacg cctgcggatt ctactggggg cccctgagcg tgcacggggc	420
gcacgagcgg ctgcgcgcc agcccgtggg caccttcctg gtgcgcgaca gccgccagcg	480
gaactgcttt ttgcgcccta gcgtgaagat ggcctcggga cccacgagca tccgcgtgca	540
ctttcaggcc ggccgctttc acctggatgg cagccgcgag agcttcgact gcctcttcga	600
gctgctggag cactacgtgg cggcgccgcg ccgcatgctg ggggccccgc tgcgccagcg	660
ccgcgtgcgg ccgctgcagg agctgtgcc ccagcgcac gtggccaccg tgggcccgcga	720
gaacctggct cgcaccccc tcaaccccgt cctccgcgac tacctgagct ccttccccctt	780
ccagatttga ccggcagcgc ccgcctgca cgcagcatta actgggatgc cgtgttatatt	840
tggttattact tgccctggaac catgtgggta ccctccccgg cctgggttgg agggagcgga	900
tgggtgtagg ggcgaggcgc ctcccgccct cggctggaga cgaggccgca gacccttct	960
cacctcttga gggggtcctc cccctcctgg tgctccctct ggggtccccct gggtgttgta	1020
gcagcttaac tgtatctgga gccaggacct gaactcgcac ctccctacct ttcattgttta	1080
catataacca gtatctttgc acaaaccagg ggttggggga gggctctctg ctttatatttt	1140
ctgctgtgca gaatcctatt ttatatatttt taaagtcagt ttaggtaata aactttatta	1200
tgaaagtttt tttttt	1216

<210> 19

<211> 256

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =

synthetic construct

<400> 19

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
1				5					10					15	
Arg	Gly	Ser	Met	Val	Thr	His	Ser	Lys	Phe	Pro	Ala	Ala	Gly	Met	Ser
			20					25					30		
Arg	Pro	Leu	Asp	Thr	Ser	Leu	Arg	Leu	Lys	Thr	Phe	Ser	Ser	Lys	Ser
		35					40					45			
Glu	Tyr	Gln	Leu	Val	Val	Asn	Ala	Val	Arg	Lys	Leu	Gln	Glu	Ser	Gly
	50					55					60				
Phe	Tyr	Trp	Ser	Ala	Val	Thr	Gly	Gly	Glu	Ala	Asn	Leu	Leu	Leu	Ser
65					70				75						80
Ala	Glu	Pro	Ala	Gly	Thr	Phe	Leu	Ile	Arg	Asp	Ser	Ser	Asp	Gln	Arg
				85					90					95	
His	Phe	Phe	Thr	Leu	Ser	Val	Lys	Thr	Gln	Ser	Gly	Thr	Lys	Asn	Leu
			100					105					110		
Arg	Ile	Gln	Cys	Glu	Gly	Gly	Ser	Phe	Ser	Leu	Gln	Ser	Asp	Pro	Arg
		115					120					125			
Ser	Thr	Gln	Pro	Val	Pro	Arg	Phe	Asp	Cys	Val	Leu	Lys	Leu	Val	His
	130					135					140				
His	Tyr	Met	Pro	Pro	Pro	Gly	Thr	Pro	Ser	Phe	Ser	Leu	Pro	Pro	Thr
145					150					155					160
Glu	Pro	Ser	Ser	Glu	Val	Pro	Glu	Gln	Pro	Pro	Ala	Gln	Ala	Leu	Pro
				165					170					175	
Gly	Ser	Thr	Pro	Lys	Arg	Ala	Tyr	Tyr	Ile	Tyr	Ser	Gly	Gly	Glu	Lys
			180					185					190		
Ile	Pro	Leu	Val	Leu	Ser	Arg	Pro	Leu	Ser	Ser	Asn	Val	Ala	Thr	Leu
		195					200					205			
Gln	His	Leu	Cys	Arg	Lys	Thr	Val	Asn	Gly	His	Leu	Asp	Ser	Tyr	Glu
	210					215					220				
Lys	Val	Thr	Gln	Leu	Pro	Gly	Pro	Ile	Arg	Glu	Phe	Leu	Asp	Gln	Tyr
225					230					235					240
Asp	Ala	Pro	Leu	Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu	Ala	Ala	Pro
				245					250					255	

<210> 20

<211> 198

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 20

Met	Thr	Leu	Arg	Cys	Leu	Glu	Pro	Ser	Gly	Asn	Gly	Gly	Glu	Gly	Thr
1				5					10					15	
Arg	Ser	Gln	Trp	Gly	Thr	Ala	Gly	Ser	Ala	Glu	Glu	Pro	Ser	Pro	Gln
			20					25					30		
Ala	Ala	Arg	Leu	Ala	Lys	Ala	Leu	Arg	Glu	Leu	Gly	Gln	Thr	Gly	Trp
		35					40					45			
Tyr	Trp	Gly	Ser	Met	Thr	Val	Asn	Glu	Ala	Lys	Glu	Lys	Leu	Lys	Glu
	50					55					60				
Ala	Pro	Glu	Gly	Thr	Phe	Leu	Ile	Arg	Asp	Ser	Ser	His	Ser	Asp	Tyr
65					70				75						80
Leu	Leu	Thr	Ile	Ser	Val	Lys	Thr	Ser	Ala	Gly	Pro	Thr	Asn	Leu	Arg
				85					90					95	
Ile	Glu	Tyr	Gln	Asp	Gly	Lys	Phe	Arg	Leu	Asp	Ser	Ile	Ile	Cys	Val
			100					105					110		

Lys Ser Lys Leu Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr
 115 120 125
 Tyr Val Gln Met Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg
 130 135 140
 Asn Gly Thr Val His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala
 145 150 155 160
 Pro Ser Leu Gln His Leu Cys Arg Leu Thr Ile Asn Lys Cys Thr Gly
 165 170 175
 Ala Ile Trp Gly Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu Glu
 180 185 190
 Glu Tyr Lys Phe Gln Val
 195

<210> 21

<211> 256

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 21

Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1 5 10 15
 Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
 20 25 30
 Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu Asp
 35 40 45
 Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln Leu
 50 55 60
 Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp Ser
 65 70 75 80
 Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro Ala
 85 90 95
 Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe Thr
 100 105 110
 Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln Cys
 115 120 125
 Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln Pro
 130 135 140
 Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met Pro
 145 150 155 160
 Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser Ser
 165 170 175
 Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr Pro
 180 185 190
 Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu Val
 195 200 205
 Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu Cys
 210 215 220
 Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr Gln
 225 230 235 240
 Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro Leu
 245 250 255

<210> 22

<211> 244

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 22

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Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 1          5          10          15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
          20          25          30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
          35          40          45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
          50          55          60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
65          70          75          80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
          85          90          95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
          100          105          110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
          115          120          125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
          130          135          140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
145          150          155          160
Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
          165          170          175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
          180          185          190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
          195          200          205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
          210          215          220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225          230          235          240
Asp Ala Pro Leu

```

<210> 23

<211> 2210

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 23

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agccgcggcc tcaactaaaa gtggccattg acctttcaag ctttcgagca gtgatgcaat      60
agaatagtat ttcaaagaaa aatgcttata gaaatttttg atccgggttt cccgtgattg      120
ttaagggttt cttttaaaaa gtaggtcaca tttcaagtag gtcataatttc gggggcgggt      180
gcgagacaaa ggagatgagt ttccactaag gccagggggc ctccaacggg gttggagggt      240
agaatcccag gtagggtaga ggtgccgaga tccttccgaa tcccagccct ggggcgtcag      300
ccctgcaggg aatggcagag acactctccg gactgaggga accgaggcca gtcaccaagc      360
cccttccggg cgcgcaggcg atcagtgggt gaccgcggct gcgagggact ttgtcatccg      420
tcctccagga tctggggaga aagagcccca tcccttctct ctctgccacc atttcggaca      480
ccccgcaggg actcgttttg ggattcgcac tgacttcaag gaaggacgcg aacccttctc      540
tgaccccagc tcgggcggcc acctgtcttt gccgcggtga cccttctctc atgaccctgc      600
ggtgccttga gccctccggg aatggcgggg aagggacgcg gagccagtgg gggaccgcgg      660
ggtcggcgga ggagccatcc ccgcaggcgg cgcgtctggc gaaggccctg cgggagctcg      720
gtcagacagg atggtactgg ggaagtatga ctgttaatga agccaaagag aaattaaaag      780

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```

aggcaccaga aggaactttc ttgattagag atagctcgca ttcagactac ctactaacaa      840
tatctgttaa aacatcagct ggaccaacta atcttcgaat cgaataccaa gacggaaaat      900
tcagattgga ctctatcata tgtgtcaaat ccaagcttaa acaatttgac agtgtggttc      960
atctgatcga ctactatgtt cagatgtgca aggataagcg gacagggtcca gaagcccccc     1020
ggaacggcac tgttcacctt tatctgacca aaccgctcta cacgtcagca ccatctctgc     1080
agcatctctg taggctcacc attaacaaat gtaccggtgc catctgggga ctgcctttac     1140
caacaagact aaaagattac ttggaagaat ataaattcca ggtataaatg tttctctttt     1200
tttaaacatg tctcacatag agtatctccg aatgcagcta tgtaaaagag aaccaaactt     1260
tgagtgtctt ggataactat atggaatgct ttctaagaac agctgaagct aatctaattt     1320
aaattttaaca gcttgaagag gtagctaggt gtttaaagtt cctccagata cttttacctg     1380
agtgatgctt cccttcctaa ggctgaccaa gacctgttga tcctttttaga ttaaaaataa     1440
aatgtcgcac gtaaaggctg aagtcgcgctt ttatcagaat gccttgccct cttagggttct     1500
tttccattat gtcaaaggct caggctccag taggagagaa agaactcctc ataggaatac     1560
tgaagaagtg ggaaggaacc aagctgacac aggcctcact gcaatttgat atgcctgctg     1620
atcagagtct cttgggcatt ttatatTTTT cttctgatg tacctaggag ttttggttaa     1680
cagatgatgt atgtgagtat ttatcccat ttatgcaatt aaccaaatac accaaaaaaa     1740
gtgaccatga agtcctgtat ttgtctTTTT actacatgta ggaactctca tgtgaatgag     1800
tactgtagta atccattcta tgggagcctt atttcagaaa tatttcaaac tgggtgcaat     1860
ggaaaagact ttctctTTTT ctttaaagct aaagacaaga atatcatgct atacagggtgc     1920
aactcaatcc ccgttaataa aaaccaatgt aggtataggc attctaccct ttgaaatagc     1980
tgtgtcccaa cctgttgcca ttgattTTTT ggaaatggct ttagaaatat ccaagttgtc     2040
cttgaattgt ctaaccatgg acataaacag ttgtctccct tctactgtgt agaatacttt     2100
gacttaattt tcttcagat acagggggat acctgcctgt ttttcaaagt gtttattttac     2160
tgctgttact atttgattag aatgtattaa ataaaaaaaa cctgattttct     2210

```

<210> 24

<211> 225

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 24

```

Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu
 1              5              10              15
Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln
      20              25              30
Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp
      35              40              45
Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro
      50              55              60
Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe
65              70              75              80
Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln
      85              90              95
Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln
      100             105             110
Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met
      115             120             125
Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser
      130             135             140
Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr
145             150             155             160
Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu
      165             170             175
Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu
      180             185             190
Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr
      195             200             205

```


Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro
 210 215 220
 Leu
 225

<210> 25
 <211> 212
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 25
 Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala
 1 5 10 15
 Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser
 20 25 30
 Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala
 35 40 45
 Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp
 50 55 60
 Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe
 65 70 75 80
 Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala
 85 90 95
 Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys
 100 105 110
 Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg
 115 120 125
 Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr
 130 135 140
 Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg
 145 150 155 160
 Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln
 165 170 175
 Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu
 180 185 190
 Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe
 195 200 205
 Pro Phe Gln Ile
 210

<210> 26
 <211> 1193
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence; note =
 synthetic construct

<400> 26
 ggcacggctc ccagccccgg agcatgcgcg acagccgccc cggagccccc agccgcggct 60
 ccccgcgctc tgccgccagc gcagccccgg acgctatggc ccaccctcc agctggcccc 120
 tcgagtagga tggtagcacg caaccagggtg gcagccgaca atgcgatctc cccggcagca 180
 gagccccgac ggcggtcaga gccctcctcg tcctcgtctt cgtcctcgcc agcggccccc 240
 gtgcgtcccc ggccctgccc ggcggtccea gccccagccc ctggcgacac tcaactccgc 300
 accttccgct cccactccga ttaccggcgc atcacgcgga ccagcgcgct cctggacgcc 360
 tgcggcttct attggggacc cctgagcgtg cacggggcgc acgagcggct gcgtgccgag 420

```

cccgtgggca ctttcttggt gcgcgacagt cgccaacgga actgcttctt cgcgctcagc 480
gtgaagatgg cttcgggccc caccagcatc cgcgtgcact tccaggccgg ccgcttccac 540
ttggacggca gccgcgagac cttcgactgc cttttcgagc tgctggagca ctacgtggcg 600
gcgccgcgcc gcatgttggg ggcgccgctg cgccagcgcc gcgtgcggcc gctgcaggag 660
ctgtgtcgcc agcgcacgtg ggccgccgtg ggtcgcgaga acctggcgcg catccctctt 720
aaccgggtac tccgtgacta cctgagttcc ttccccttcc agatctgacc ggctgccgct 780
gtgccgcagc attaagtggg ggcgccttat tatttcttat tattaattat tattattttt 840
ctggaaccac gtgggagccc tccccgcctg ggtcggaggg agtggttgtg gagggtgaga 900
tgcctcccac ttctggctgg agacctcatc ccacctctca ggggtggggg tgctcccctc 960
ctggtgctcc ctccgggtcc cccctgggtg tagcagcttg tgtctggggc caggacctga 1020
attccactcc tacctctcca tgtttacata ttcccagtat ctttgcacaa accaggggtc 1080
ggggagggtc tctggcttca tttttctgct gtgcagaata tcctatttta tatttttaca 1140
gccagtttag gtaataaact ttattatgaa agtttttttt taaaagaaac aaa 1193

```

<210> 27

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 27

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Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1          5          10          15
Arg Gly Ser Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile
          20          25          30
Ser Pro Ala Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser
          35          40          45
Ser Ser Ser Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala
          50          55          60
Val Pro Ala Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser
65          70          75          80
His Ser Asp Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala
          85          90          95
Cys Gly Phe Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg
          100          105          110
Leu Arg Ala Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln
          115          120          125
Arg Asn Cys Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr
          130          135          140
Ser Ile Arg Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser
145          150          155          160
Arg Glu Thr Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala
          165          170          175
Ala Pro Arg Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg
          180          185          190
Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg
          195          200          205
Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu
          210          215          220
Ser Ser Phe Pro Phe Gln Ile
225          230

```

<210> 28

<211> 243

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 28

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
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Arg	Gly	Ser	Met	Val	Ala	Arg	Asn	Gln	Val	Ala	Ala	Asp	Asn	Ala	Ile
			20					25					30		
Ser	Pro	Ala	Ala	Glu	Pro	Arg	Arg	Arg	Ser	Glu	Pro	Ser	Ser	Ser	Ser
		35				40					45				
Ser	Ser	Ser	Ser	Pro	Ala	Ala	Pro	Val	Arg	Pro	Arg	Pro	Cys	Pro	Ala
	50					55				60					
Val	Pro	Ala	Pro	Ala	Pro	Gly	Asp	Thr	His	Phe	Arg	Thr	Phe	Arg	Ser
65					70					75					80
His	Ser	Asp	Tyr	Arg	Arg	Ile	Thr	Arg	Thr	Ser	Ala	Leu	Leu	Asp	Ala
			85					90					95		
Cys	Gly	Phe	Tyr	Trp	Gly	Pro	Leu	Ser	Val	His	Gly	Ala	His	Glu	Arg
			100					105					110		
Leu	Arg	Ala	Glu	Pro	Val	Gly	Thr	Phe	Leu	Val	Arg	Asp	Ser	Arg	Gln
		115				120					125				
Arg	Asn	Cys	Phe	Phe	Ala	Leu	Ser	Val	Lys	Met	Ala	Ser	Gly	Pro	Thr
	130					135					140				
Ser	Ile	Arg	Val	His	Phe	Gln	Ala	Gly	Arg	Phe	His	Leu	Asp	Gly	Ser
145					150					155					160
Arg	Glu	Thr	Phe	Asp	Cys	Leu	Phe	Glu	Leu	Leu	Glu	His	Tyr	Val	Ala
			165					170					175		
Ala	Pro	Arg	Arg	Met	Leu	Gly	Ala	Pro	Leu	Arg	Gln	Arg	Arg	Val	Arg
			180					185					190		
Pro	Leu	Gln	Glu	Leu	Cys	Arg	Gln	Arg	Ile	Val	Ala	Ala	Val	Gly	Arg
		195					200					205			
Glu	Asn	Leu	Ala	Arg	Ile	Pro	Leu	Asn	Pro	Val	Leu	Arg	Asp	Tyr	Leu
	210				215						220				
Ser	Ser	Phe	Pro	Phe	Gln	Ile	Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu
225					230					235					240
Ala	Ala	Pro													

<210> 29

<211> 243

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; note =
synthetic construct

<400> 29

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
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Arg	Gly	Ser	Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu	Ala	Ala	Pro	Met
			20					25					30		
Val	Ala	Arg	Asn	Gln	Val	Ala	Ala	Asp	Asn	Ala	Ile	Ser	Pro	Ala	Ala
		35				40					45				
Glu	Pro	Arg	Arg	Arg	Ser	Glu	Pro	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser
	50					55				60					
Pro	Ala	Ala	Pro	Val	Arg	Pro	Arg	Pro	Cys	Pro	Ala	Val	Pro	Ala	Pro
65					70					75					80
Ala	Pro	Gly	Asp	Thr	His	Phe	Arg	Thr	Phe	Arg	Ser	His	Ser	Asp	Tyr
			85					90						95	

Arg	Arg	Ile	Thr	Arg	Thr	Ser	Ala	Leu	Leu	Asp	Ala	Cys	Gly	Phe	Tyr
			100					105					110		
Trp	Gly	Pro	Leu	Ser	Val	His	Gly	Ala	His	Glu	Arg	Leu	Arg	Ala	Glu
		115					120					125			
Pro	Val	Gly	Thr	Phe	Leu	Val	Arg	Asp	Ser	Arg	Gln	Arg	Asn	Cys	Phe
		130				135					140				
Phe	Ala	Leu	Ser	Val	Lys	Met	Ala	Ser	Gly	Pro	Thr	Ser	Ile	Arg	Val
145					150					155					160
His	Phe	Gln	Ala	Gly	Arg	Phe	His	Leu	Asp	Gly	Ser	Arg	Glu	Thr	Phe
				165					170					175	
Asp	Cys	Leu	Phe	Glu	Leu	Leu	Glu	His	Tyr	Val	Ala	Ala	Pro	Arg	Arg
			180				185						190		
Met	Leu	Gly	Ala	Pro	Leu	Arg	Gln	Arg	Arg	Val	Arg	Pro	Leu	Gln	Glu
		195					200					205			
Leu	Cys	Arg	Gln	Arg	Ile	Val	Ala	Ala	Val	Gly	Arg	Glu	Asn	Leu	Ala
		210				215					220				
Arg	Ile	Pro	Leu	Asn	Pro	Val	Leu	Arg	Asp	Tyr	Leu	Ser	Ser	Phe	Pro
225					230					235					240
Phe	Gln	Ile													